

WHAT IS CLAIMED IS:

1. A method of producing a flowable composition that sets into a calcium phosphate containing product, said method comprising:  
5 combining:  
    (a) a setting fluid;  
    (b) dry reactants comprising a calcium source and a phosphate source;  
and  
    (c) a water-soluble contrast agent;  
10 in a ratio sufficient to produce said flowable material.
2. The method according to Claim 1, wherein said setting fluid comprises said water-soluble contrast agent.
- 15 3. The method according to Claim 1, wherein said dry reactants comprise said water-soluble contrast agent.
4. The method according to Claim 1, wherein said water-soluble contrast agent comprises a salt of a radio-opaque element.  
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5. The method according to Claim 4, wherein said radio-opaque element has a radio-opacity that differs from calcium.
6. The method according to Claim 4, wherein said radio-opaque element is  
25 one that is incorporated into a calcium phosphate apatite structure of said calcium phosphate containing product.
7. The method according to Claim 4, wherein said radio-opaque element is chosen from barium, oxalate, zirconium, tantalum and tungsten.

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8. The method according to Claim 7, wherein said radio-opaque element is barium.
9. The method according to Claim 8, wherein said salt of said radio-opaque  
5 element is barium chloride.
10. The method according to Claim 1, wherein said ratio ranges from about 0.2:1 to 0.7:1.
- 10 11. The method according to Claim 10, wherein said flowable composition is a paste.
12. The method according to Claim 1, wherein said setting fluid is a solution of a soluble silicate.
- 15 13. The method according to Claim 1, wherein said flowable composition sets into said calcium phosphate containing product in a period of time ranging from about 5 to 10 minutes.
- 20 14. The method according to Claim 1, wherein said calcium phosphate containing product has a compressive strength ranging from about 25 to 100 MPa.
- 25 15. A method of producing a paste that sets into a calcium phosphate containing product, said method comprising:
- (a) combining:
    - (i) dry reactants comprising a calcium source and a phosphate source;
    - (ii) a setting fluid; and
    - 30 (iii) a water-soluble barium salt;

- wherein said dry reactants, setting fluid and water-soluble barium salt are combined in a ratio sufficient to provide for said paste; and
- (b) mixing said combined reactants and setting fluid for a sufficient period of time to produce a paste capable of setting into a calcium phosphate containing product.
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16. The method according to Claim 15, wherein said setting fluid comprises said water-soluble barium salt.
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17. The method according to Claim 15, wherein said dry reactants comprise said water-soluble barium salt.
18. The method according to Claim 15, wherein said water-soluble barium salt is barium chloride.
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19. The method according to Claim 15, wherein said setting fluid is a solution of a soluble silicate.
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20. The method according to Claim 15, wherein both said setting fluid and dry reactants comprise said water-soluble barium salt.
21. The method according to Claim 15, wherein said flowable composition sets into said calcium phosphate containing product in a period of time ranging from about 5 to 10 minutes.
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22. The method according to Claim 15, wherein said calcium phosphate containing product has a compressive strength ranging from about 25 to 100 MPa.

23. A flowable composition that sets into a calcium phosphate containing product, wherein said composition is produced by the method according to Claim 1.

24. A method of repairing a hard tissue defect, said method comprising:  
applying to the site of said defect a flowable composition that sets into a calcium phosphate containing product, wherein said composition is produced by the method according to Claim 1.

25. A kit for use in a preparing a flowable composition that sets in an in vivo fluid environment into a calcium phosphate product, said kit comprising:  
(a) dry reactants comprising a calcium source and a phosphate source;  
(b) a setting fluid or components for producing the same; and  
(c) a water-soluble contrast agent.

26. A packaged calcium phosphate cement, said packaged cement comprising:  
a tubular element separated into a first compartment and at least one additional compartment by a removable barrier;  
(i) dry reactants comprising a source of calcium and phosphate present in said first compartment;  
(ii) a setting fluid or components thereof present in said at least one additional compartment; and  
(iii) a water-soluble contrast agent present in either said first compartment, said at least one additional compartment or in a second additional compartment;.

27. The packaged calcium phosphate cement according to Claim 26, wherein said removable barrier is a clip.

28. The packaged calcium phosphate cement according to Claim 26, wherein said removable barrier is a frangible barrier.

29. The packaged calcium phosphate cement according to Claim 26, wherein  
5 said setting fluid is a solution of a soluble silicate.